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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,659	07/14/2004	Mark E Marler	60469-166;OT-5016	2290
64779 7590 06/17/2009 CARLSON GASKEY & OLDS 400 W MAPLE STE 350 BIRMINGHAM, MI 48009				
EXAMINER PICO, ERIC E				
ART UNIT 3654		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/501,659

Applicant(s)

MARLER ET AL.

Examiner

ERIC PICO

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SD/US)
Paper No(s)/Mail Date 1/29/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/26/2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claim(s) 18-20 and 23-26** is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Baranda et al. U.S. Patent No. 6364061 in view of Yaginuma JP Application No. 8-247221 and Hull U.S. Patent No. 4647278.

4. **Regarding claim 18**, Baranda et al. discloses a method of designing an elevator system having a belt with a plurality of grooves on one side of the belt that travels over at least a drive sheave 24, comprising the steps of:

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5. selecting a diameter of at least the drive sheave 24 ranging from 380 mm due to ANSI in Column 1, Lines 42-45 to 64 mm due to a theoretical 80% reduction of a 320 mm diameter sheave during the instance for a sheave typical low rise gearless elevator system using three tension members, each with five 3 mm aramid fiber ropes, Column 7, Lines 34-44;
6. Baranda et al. is silent concerning selecting a width of the grooves on the belt such that a ratio of the groove width to the sheave diameter is less than about .015,
7. wherein the ratio is dependent on an associated elevator cab speed of travel and the selected diameter and the selected width are selected to maintain the ratio (i) within a first range when the speed of travel is above a first speed or (ii) within a second, higher range when the speed of travel is a second, slower speed below the first speed; and providing a fillet at an edge of each groove.
8. Yaginuma teaches a method of designing a system having a belt 10 with a plurality of grooves 13 on one side of the belt 10 that travels over a drive sheave 20, comprising the steps of:
 9. selecting a width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].
 10. Hull teaches a method of designing a system having a belt 20 with a plurality of grooves 28 on one side of the belt, comprising the steps of:
 11. provided with a fillet 46 at the edges of each groove 28.
 12. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by

Baranda et al. yielding a groove width to sheave diameter ratio between .023 and .004 to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

13. It would have been obvious to one of ordinary in the art at the time of the invention was made to select a ratio dependent on an associated elevator cab speed of travel and select a diameter and a width to maintain the ratio (i) within a first range when the speed of travel is above a first speed or (ii) within a second, higher range when the speed of travel is a second, slower speed below the first speed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

14. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.

15. **Regarding claim 19**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45

16. Baranda et al. is silent concerning groove width to sheave diameter ratio less than about .008.

17. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

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18. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

19. **Regarding claim 20**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

20. Baranda et al. is silent concerning groove width to sheave diameter ratio between .001 and .015.

21. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

22. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

23. **Regarding claim 23**, Baranda et al. discloses an elevator system, comprising:

24. a cab 14 that moves at a contract speed;

25. a belt 22 that supports the cab 14 and facilitates movement of the cab 14,

26. at least one sheave 24 over which the belt 22 travels as the cab 14 moves, the sheave 24 having a diameter of at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

27. Baranda et al. is silent concerning the belt having a plurality of spaced grooves on at least one side of the belt, each of the grooves including a fillet at an edge of each groove; and
28. the sheave having a diameter that has a relationship to a width of the grooves on the belt so that a ratio of the groove width to the sheave diameter is less than about .015,
29. wherein the ratio of the groove width to the sheave diameter is selected dependent on the contract speed such that the ratio is (i) within a first range when the contract speed is above a first speed or (ii) within a second, higher range when the contract speed is a second, slower speed below the first speed.
30. Yaginuma teaches a belt 10 having a plurality of spaced grooves 13 on at least one side of the belt 10; and
31. a width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].
32. Hull further teaches a belt 20 with a plurality of spaced grooves 28 one at least one side of the belt 20, each of the grooves including a fillet 46 at an edge of each groove 28.
33. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .015 to reduce the noise of impact generated when the belt makes contact with the drive sheave.

34. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.

35. It would have been obvious to one of ordinary in the art at the time of the invention was made to select a ratio of the groove width to the sheave diameter dependent on a contract speed such that the ratio is (i) within a first range when the contract speed is above a first speed or (ii) within a second, higher range when the contract speed is a second, slower speed below the first speed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

36. **Regarding claim 24**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

37. Baranda et al. is further silent concerning the belt having grooves and a ratio of the groove width to the sheave diameter less than about .008.

38. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

39. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave.

40. **Regarding claim 25**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.
41. Baranda et al. is further silent concerning the belt having grooves and a ratio of the groove width to the sheave diameter is between .001 and .015.
42. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].
43. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave.
44. **Regarding claim 26**, Baranda et al. is further silent concerning fillets at the edges of each groove having a radius of curvature that's is between about 0.1 mm and about 0.5 mm.
45. Hull further teaches the fillets 46 each having a radius of curvature of 0.047 in (1.1938 mm) which is between about 0.1 mm and about 0.5 mm.
46. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.
47. **Claim(s) 21** is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Baranda et al. U.S. Patent No. 6364061 in view of Yaginuma JP Application No. 8-247221 and Hull U.S. Patent No. 4647278 as applied to claim 18 above, and further in view of Aulanko et al. U.S. Patent No. 6199666.

48. **Regarding claim 21**, Baranda et al. discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.
49. Baranda et al. is silent concerning the elevator system having expected speed of approximately 1 m/s and the sheave diameter and a ratio of the groove width to the sheave diameter less than about .008.
50. Yaginuma teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].
51. Aulanko et al. teaches an elevator drive mechanism providing an elevator system with an expected speed of approximately 1 m/s in Column 1, Lines 42-45.
52. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 based upon an expected speed of approximately 1 m/s taught by Aulanko et al. to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.
53. **Regarding claim 22**, Baranda et al. is silent concerning transverse fillets having a radius of curvature between about 0.1 mm and about 0.5 mm.
54. Hull teaches longitudinal fillets having a radius of curvature of 0.004 in (0.1016 mm) in Column 3, Lines 67-68 and Column 4, Line 1 which is between about 0.1 mm and about 0.5 mm
55. It would have been obvious to one of ordinary skill in the art at the time of the invention to make the radius of curvature or the transverse fillets disclosed by Hull with

a radius of curvature of 0.004 in taught by Hull to increase the amount of material providing a longer life span.

Response to Arguments

56. Applicant's arguments filed 5/26/2009 have been fully considered but they are not persuasive.

57. In response to applicant's argument that "Applicant's claims 18 and 23 require an opposite result in which the ratio is within a first range when the speed of travel or contract speed of the elevator car is above a first speed and in a second, higher range when the speed of travel or contract speed is at a lower speed below that first speed", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Conclusion

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC PICO whose telephone number is (571)272-5589. The examiner can normally be reached on 6:30AM - 3:00PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Nguyen can be reached on 571-272-6952. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John Q. Nguyen/
Supervisory Patent Examiner, Art Unit 3654

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